

## ABSTRACT

A polypeptide, called Tir ( for translocated intimin receptor, which is secreted by attaching and effacing pathogens, such as the enteropathogenic (EPEC) and enterohemorrhagic (EHEC) *E. coli*. These bacterial pathogens inserts their own receptors into mammalian cell surfaces, to which the bacterial pathogen then adheres to trigger additional host signaling events and actin nucleation. Diagnosis of disease caused by pathogenic *E. coli* can be performed by the use of antibodies which bind to Tir to detect the protein or the use of nucleic acid probes for detection of nucleic acids encoding Tir polypeptide. Isolated nucleic acid sequences encoding Tir polypeptide, Tir peptides, a recombinant method for producing recombinant Tir, antibodies which bind to Tir, and a kit for the detection of Tir-producing *E. coli* are provided. A method of immunizing a host with Tir to induce a protective immune response to Tir or a second polypeptide of interest is also provided. A method for screening for compounds which interfere with the binding of bacterial pathogens to their receptors is further provided.